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Get Crackin': True Cost of Almonds in Drought Stricken California

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Almonds are a water-intensive crop that require extensive irrigation in the Central Valley. They cannot be allowed to fallow during dry years without jeopardizing the trees. Credit: Public Policy Institute of California

California's top ambassador is a little brown nut often salted and packed in a vacuum-sealed can. Almonds are widely consumed around the world from confectionary goods to being served atop salads. Eat an almond and more likely than not it came from California. The Golden State produces over 80% of the world's almond supply. Growing demand for the nutritious nut coincides with a series of intensifying droughts afflicting the state and disrupting the state's water supply. Almonds have come under scrutiny as questions arise over whether using such a limited resource to grow a cash crop is worth the damage sustained by the environment and the toll its inflicted on public health.

Demand for almonds has skyrocketed in recent years and does not appear to be slowing down anytime soon. Fueling this boom is robust demand from emerging markets like China and India where almonds have been promoted as a healthful snack. Almonds are California's top agricultural export, indirectly contributing $21.5 billion to the state's economy, according to a 2018 California Department of Food & Agriculture report. Growing demand coincides with water becoming scarcer as droughts intensify. This has not stopped farmers from growing more almonds. With booming demand and access to subsidized water, California's almond yield quadrupled over the last 30 years with over a million acres devoted solely to almond cultivation.

Farmers growing almonds and other crops in the California's Central Valley have access to highly subsidized state and federal water sources. Subsidized water translates to cheaper and more abundant food. This is great for consumers and farmers alike because consumers can buy more of their favorite heart-healthy snack and farmers are more than happy to oblige.

The biggest barrier to almond production is water. Almonds are an extremely water-intensive crop, a recent University of California--Davis study found that it takes 12 liters of water to grow a single kernel. Unlike field crops like cotton, alfalfa and vegetables, almonds cannot be left fallow during dry years and require round the clock irrigation. So even during droughts, almond trees must be watered or risk jeopardizing the trees. To keep their orchards alive and health-minded consumers satisfied, farmers began pumping heavily from aquifers to replace water that would typically come from aqueducts. This reliance on groundwater caused a number of adverse consequences not made aware to almond consumers.

Using groundwater to irrigate almonds and other crops has economic and environmental implications. Ground subsidence is a major concern because as the water table lowers, the soil compacts causing the ground to sink. Pumping aquifers to the last drop to irrigate thirsty crops also unlocks dangerous levels of arsenic. Arsenic is a well-known carcinogen and been discovered at elevated levels in millions of people's drinking water supply. Some farming communities located adjacent to farms with permanent crops have even gone dry and run out of running water entirely.

Almonds and agricultural interests are not the only group vying for water. There are three main water stakeholders in California: agricultural, environmental and urban. Water allocations between these groups are fiercely contested for who will get what and how much. During the last drought (2015-2017), water districts controlling environmental and urban supply, collectively cut water use by 25%. At the same time, agriculture, which accounts for 80% of the state's human water use, was not required to make cuts and achieved record crops. While cities shuttered faucets and rivers ran dry, many Central Valley farmers expanded their operations by planting more permanent, water-intensive crops like almonds.

Changes to agriculture's use of water must be implemented to prevent any further degradation to aquifers and the environment. To reduce consumption of water in the agricultural industry, the state should implement a comprehensive water metering system. A water-metering system would assess the amount of water used and would charge a fee based on the volume of water consumed. This idea isn't revolutionary or new, rather it would be an expansion of an existing law. Legislation passed in 2004 mandated the installation of water meter systems in cities statewide by 2025. The goal was to reduce water waste and encourage conservation across the state. Similar action can be taken to address water usage in the agricultural industry. Farmers that cultivate less water-intensive crops would have a lower water bill than more water-intensive crops like almonds. A statewide meter system across every farm and well access would successfully reduce water usage by encouraging conservation and efficiency. Successful implementation would abate existing environmental impacts and would improve efficiency through sustainable management.

Almonds may indirectly contribute $21.5 billion to the state economy, but is it worth contaminating millions of people's drinking water with arsenic and creating a modern-day Dust Bowl? There seems to be a rigid tradeoff between higher economic returns and higher water-usage with higher water-usage and environmental impacts often taking a backseat concern. Farmers cannot continue to freely produce almonds and other water-intensive crops with such little regard to the deleterious effects of their actions. Groundwater and water usage in general need to be reigned in and managed to ensure long-term sustainability of this precious resource.